

WHAT IS CLAIMED IS:

1. A method of selecting a portion of an image, the portion of the image containing a feature of interest, a view of the image being displayed on a display, the image being generated from an image-defining array containing image data corresponding to image properties at points within a coordinate system containing the image, the image-defining array being stored by an image processing system, and a user having a user interface for interacting with the image processing system, the method comprising the steps of:
 - (a) determining a seed point in the image defining array in response to the selection by the user of a pixel in the view of the image being displayed; and
 - (b) growing a region about said seed point, wherein the growth of said region is responsive to input from the user interface, such that manipulation of the user interface selectively determines the extent of the growth of said region.
2. The method defined in claim 1, wherein said step of growing said region comprises an iterative series of steps, the steps comprising:

evaluating an untested point in the image defining array adjacent to a boundary member point to determine if the untested point is a member of said region, said boundary member point being said seed point for a first iteration and said boundary member point being a member point at the boundary of said region for subsequent iterations;

adding to said region the untested points that are determined to be members of said region;

excluding from said region the untested points that are determined not to be members of said region; and

visually distinguishing, on the view of the image being displayed, the points determined to be members of said region from other points,

wherein the number of iterations performed is responsive to the user interface, such that manipulation of the user interface selectively determines the extent of the growth of said region.

3. The method defined in claim 2, wherein said image is a three dimensional image, and wherein said image defining array is a three dimensional array.
4. The method defined in claim 3, wherein a view of the image being displayed comprises a sectional view of said three dimensional image and the method further comprising the step, prior to step (a), of displaying said sectional view in response to user selection of a sectional plane through said three dimensional image, and wherein the user selects said sectional plane showing at least a substantial portion of said feature of interest.
5. The method defined in claim 4, wherein said pixel selected by the user for determining a seed point comprises a pixel located within the feature of interest.
6. The method defined in claim 4, wherein said step of visually distinguishing comprises blacking out the pixels in said sectional view corresponding to points in the image defining array determined to be member points of said region.
7. The method defined in claim 6, wherein manipulation of the user interface causes a decrease in said number of iterations performed, and wherein

in response thereto said region is retracted and said blacking out is removed from pixels corresponding to former member points of said region.

8. The method defined in claim 7, wherein said blacking out comprises the application of a mask to said image defining array, said mask comprising a three dimensional array, the entries of said mask indicating the member status of each point in the image defining array.
9. The method defined in claim 4, wherein said portion of the image corresponding to said region substantially comprises said feature of interest.
10. The method defined in claim 1, wherein the user interface has an initial position, and wherein subsequent thereto the user interface may be displaced from said initial position, said displacement causing the extent of the region to be expanded.
11. The method defined in claim 9, wherein retraction of the user interface towards said initial position causes the extent of the region to be retracted.
12. The method defined in claim 10, wherein said user interface comprises a computer mouse.
13. The method defined in claim 10, wherein said image is a three dimensional image, and wherein said image defining array is a three dimensional array.
14. The method defined in claim 12, wherein said image is an ultrasound image.
15. The method defined in claim 1, wherein said user interface comprises a device selected from the group comprising a keyboard, a mouse, a trackball, a touch pad, a microphone and a pen.

16. The method defined in claim 1, further comprising the step of displaying a view of the portion of the image corresponding to said region.
17. The method defined in claim 1, further comprising the step of displaying a view of a portion of the image corresponding to points outside said region.
18. An image processing system for selecting a portion of an image, the portion of the image containing a feature of interest, a view of the image being displayed on a display, the image being generated from an image-defining array containing image data corresponding to image properties at points within a coordinate system containing the image, the image-defining array being stored by the image processing system, a seed point in the image defining array being determined based upon the selection by a user of a pixel in the view of the image being displayed, the image processing system comprising:
 - (a) a user interface for selecting said pixel and for selectively determining the extent of the growth of a region; and
 - (b) region growing module for growing said region about the seed point, said region growing module increasing and decreasing the growth of said region performed in response to manipulation of said user interface;

wherein the view of the image being displayed shows the size of said region.

19. The image processing system as defined in claim 18, wherein said image is a three dimensional image, and wherein said image defining array is a three dimensional array.
20. The image processing system as defined in claim 19, wherein a view of

the image being displayed on the display comprises a sectional view of said three dimensional image, the system further including a view selection module, said view selection module being responsive to user selection of a sectional plane through said three dimensional image.

21. The image processing system as defined in claim 20, wherein said region growing module further includes a mask component for blacking out pixels in said sectional view corresponding to the points in the image defining array determined to be members points of said region.
22. The image processing system defined in claim 18, wherein said user interface has an initial position and wherein displacement of said user interface from said initial position causes the extent of growth performed by said region growing module to be increased.
23. The image processing system defined in claim 22, wherein the extent of growth performed is decreased in response to retraction of said user interface towards said initial position.
24. The image processing system defined in claim 23, wherein said user interface comprises a computer mouse.
25. The image processing system defined in claim 23, wherein said image is a three dimensional image, and wherein said image defining array is a three dimensional array.
26. The image processing system defined in claim 25, wherein said image is an ultrasound image.
27. The image processing system defined in claim 18, wherein said region growing module performs an iterative series of steps, each iteration expanding the growth of said region, and wherein the number of iterations performed is responsive to the user interface, such that manipulation of

the user interface selectively determines the extent of the growth of said region

28. A computer program product comprising a computer readable medium carrying program means for selecting a portion of an image, the portion of the image containing a feature of interest, a view of the image being displayed on a display, the image being generated from an image-defining array containing image data corresponding to image properties at points within a coordinate system containing the image, the image-defining array being stored by an image processing system, and a user having a user interface for interaction with the image processing system, the computer program product comprising:

code means for determining a seed point in the image defining array in response to the selection by the user of a pixel in the view of the image being displayed; and

code means for growing a region about said seed point, wherein the growth of said region is responsive to the user interface, such that manipulation of the user interface selectively determines the extent of the growth of said region.

29. The computer program product defined in claim 28 wherein the computer readable medium comprises a medium selected from the group comprising a modulated electrical signal, a modulated optical signal, a magnetic storage medium and an optical storage medium.